INDEX

SOUTH BEND *Precision* MACHINE TOOLS

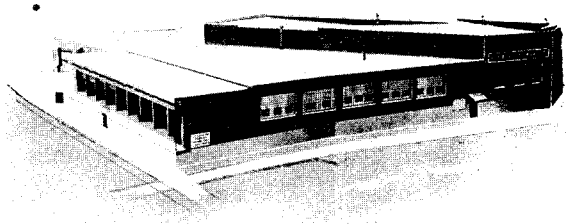
ENGINE LATHES • TOOLROOM LATHES • TURRET LATHES • MILLING MACHINES • SHAPERS • DRILL PRESSES • PEDESTAL GRINDERS

Precision Built for Precision Machine Work

For more than fifty years South Bend Lathe has been building Precision Machine Tools exclusively. During that time a vast amount of experience has been gained. It has always been the policy of this company to produce a quality product at a reasonable price. Modern plant facilities plus half a century of "know-how" enable us to build a better product and to give you a better value than ever before.

PRICES

Prices in this catalog are net f.o.b. South Bend, Indiana unless otherwise stated. In accordance with our established policy prices are subject to change without notice and accordingly prices herein are not necessarily those at which deliveries will be made at any future date because we reserve the right to invoice future deliveries at prices in effect at that time.

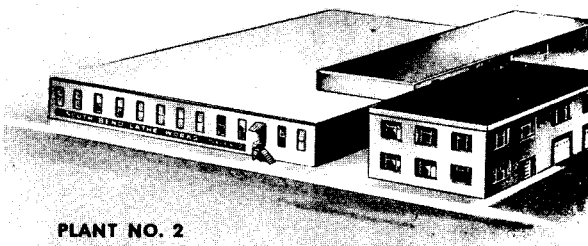


PLANT NO. 3

WARRANTY

South Bend Lathe Works warrants its products to conform to or excel the specifications set forth in its catalogs in use at the time of sale and reserves the right, at its own discretion, without notice and without making similar changes in articles previously manufactured, to make changes in materials, design, finish, or specifications. South Bend Lathe Works warrants products of its own factory against defects of material or workmanship for a period of one year from date of sale. Liability of South Bend Lathe Works under this warranty shall be limited to replacing, free of charge, f.o.b. South Bend, Indiana, any such parts proving defective within the period of this warranty but South Bend Lathe Works will not be responsible for transportation charges or consequential damages.

The warranty of South Bend Lathe Works is not made for products manufactured by others which are illustrated and described in "South Bend" catalogs or incorporated in "South Bend" products in essentially the same form as supplied by the original manufacturer. With respect to all such products, the warranties of the original manufacturers supplant the warranty of South Bend Lathe Works but, in applicable instances, the latter agrees to use its best efforts to have original suppliers make good their warranties.



PLANT NO. 2

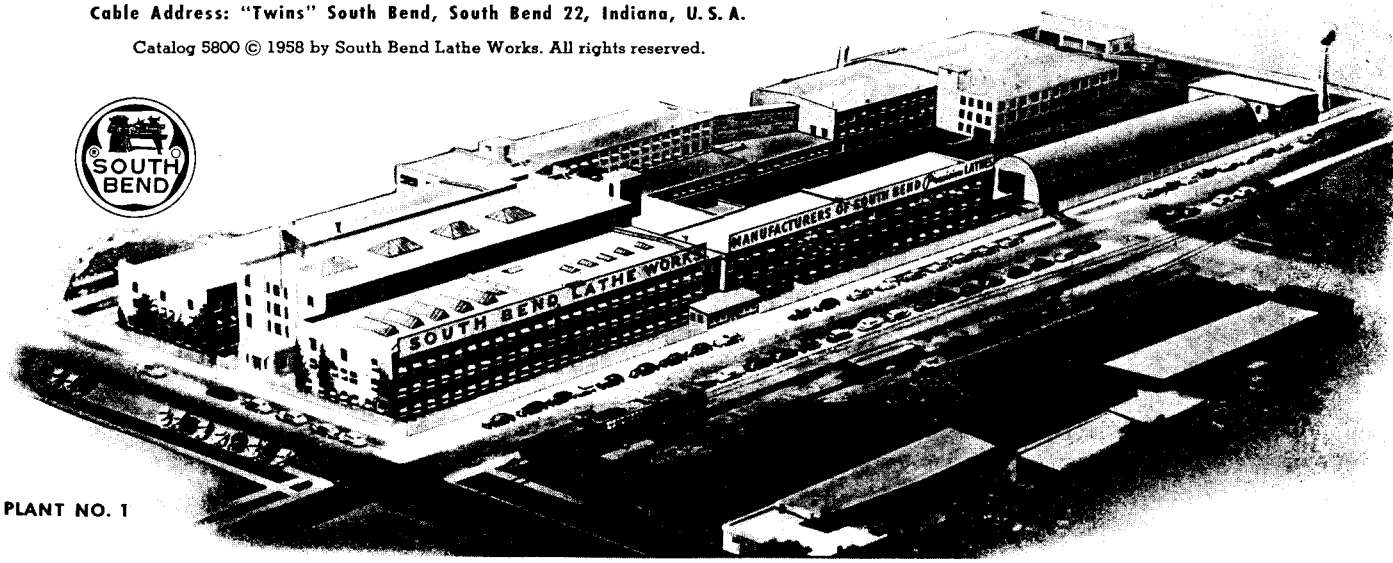
TRADE MARKS

The trade marks **SOUTH BEND** and  are owned by South Bend Lathe Works and are registered in the United States Patent Office and in principal foreign countries. In order to obtain the very best in precision machine tools and other products illustrated in this catalog, ask for them by name **SOUTH BEND.**

SOUTH BEND LATHE WORKS

Building Better Tools Since 1906

Cable Address: "Twins" South Bend, South Bend 22, Indiana, U. S. A.



PLANT NO. 1

Improved
SOUTH BEND *Precision* LATHES

FEATURES OF 10"-1⅛" COLLET AND LARGER SIZES

DEPENDABLE QUALITY

You can depend on the quality of South Bend Lathes because they are designed and built by men who take pride in their craftsmanship. Each operation, each part, each assembly, each lathe is manufactured to exacting specifications. Inspection is frequent and rigid. Parts that do not "measure up" are discarded. Final tests are recorded on a factory test card similar to the one shown and are kept on file in our office permanently.

Continual research has resulted in many improvements which contribute to the accuracy, durability, and ease of operation of South Bend Lathes. Each new design is thoroughly tested in our experimental laboratory or by actual use in our own shops (usually both) before it is approved for production.

SMOOTH POWER

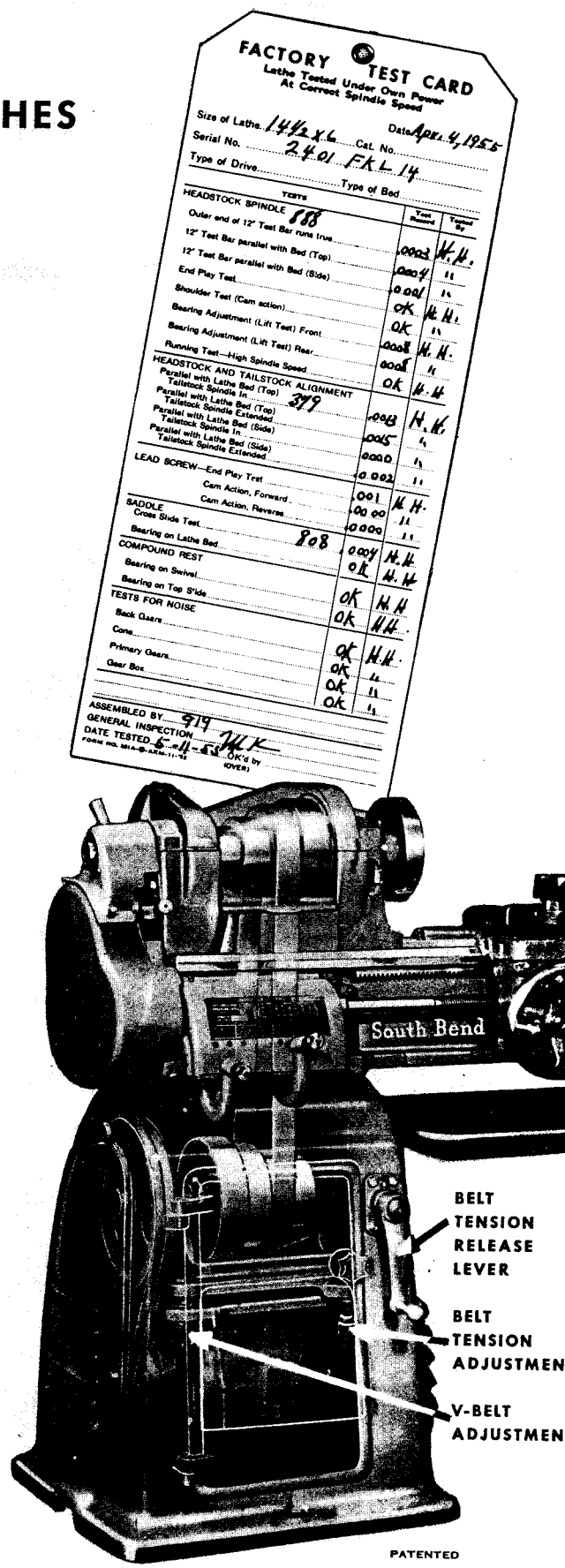
Direct belt drive to the spindle gives you the smooth, silent power so essential for high speed precision finishing operations. For heavy cuts you have a powerful back-geared drive. Motor and driving mechanism are fully enclosed in base of lathe. Quick acting belt tension release and convenient back-gear lever permit changing spindle speeds quickly and easily.

SUPERFINISHED SPINDLE

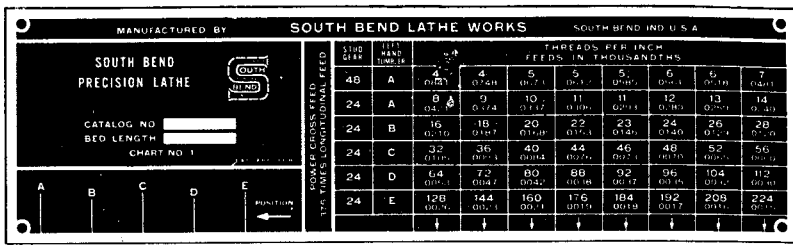
Headstock spindle bearing surfaces are hardened, ground and superfinished to a surface smoothness of five microinches (.000005") r.m.s. Spindle runs in bronze bearings which are precision bored and burnished to a smoothness of ten microinches (.000010") r.m.s. Large oil reservoirs and capillary wicks circulate clean filtered oil through the bearings. This bearing construction provides rigid support to the spindle and eliminates vibration which sometimes results when ball or roller bearings are used.

IMPROVED CARRIAGE

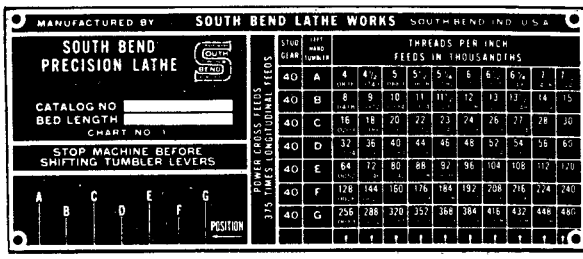
New time saving improvements developed by South Bend engineers add to the convenience and ease of operation of the improved carriage. Large, easy reading graduated collars on cross-feed and compound rest screws have non-glare satin finish chrome surface with black lines and figures. Cross-feed screw has ball thrust bearing for smooth, easy operation. Quick-acting lever operated clutch permits instant engagement or dis-



engagement of power feeds. Ground thread cross-feed screw is optional at extra cost. Also available at extra cost is a fine feed apron handwheel with planetary gear reduction for positioning carriage on bed with extreme precision. See page 47. Saddle has long bearings on bed ways with convenient oilers and felt wipers. Both compound rest top and base dovetails have tapered gibs and compound rest swivel is accurately graduated 180°. Carriage lock is conveniently located on right saddle wing. Cross-feed crank and apron handwheel have swivel machine handles. Apron is of the rigid one-piece double wall construction with gear shafts supported on both ends. Large oil reservoir in apron provides automatic lubrication. Half-nuts are dovetailed into back wall of apron and have automatic interlock which prevents engaging power feeds and half-nuts at the same time.



Index chart showing threads cut on 13″ and larger lathes.

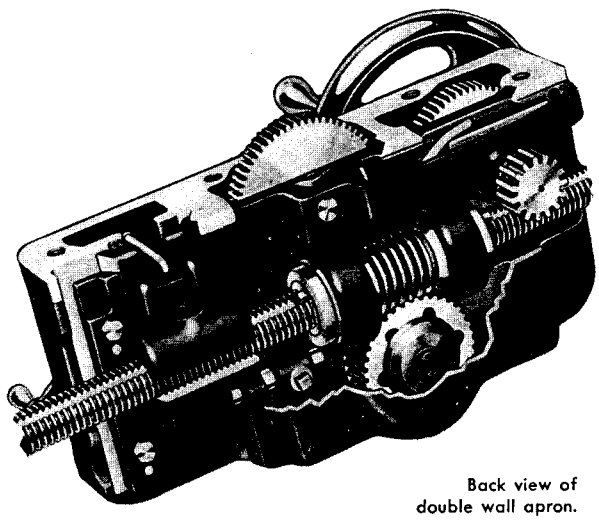


Index chart showing threads cut on 10″ lathes.

IMPROVED QUICK CHANGE BOX

Years of research and testing resulted in the improved double tumbler quick change box, an exclusive South Bend feature. Compact, dependable, and easy to set for any desired thread or feed, this mechanism has been copied but never duplicated. The direct reading index chart shows positions of levers for each of 48 screw threads, 48 power longitudinal feeds and 48 power cross-feeds. Wide range quick change box (on 10″ lathe only) has an additional 22 changes making a total of 70 threads or feeds. See index chart illustrations.

Standard screw threads are obtained by shifting the two tumbler levers on the gear box. Special stud and intermediate gearing can be supplied at extra cost for diametral pitch worm threads or other special pitches not shown on the index chart. Metric gear box and lead screw can be supplied in lieu of English (no extra cost) or metric transposing gears can be furnished (extra cost) for cutting metric threads. See page 59.

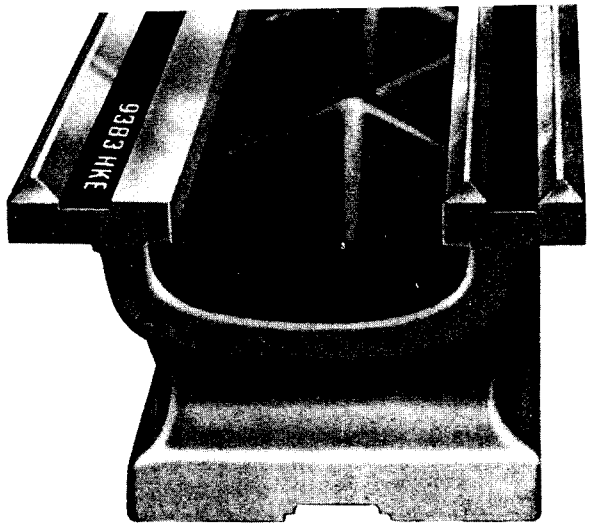


Back view of double wall apron.

RIGID LATHE BED

Hardened and ground bed ways are optional at small extra cost. See page 28.

Beds are heavily constructed with large braces cast in at short intervals. Bed castings are made of a special grade of iron with 30 to 70% steel (depending on size) which produces a hard, close-grained metal having unusual strength and long wearing qualities. Headstock, tailstock, and carriage are aligned on bed by three large V-ways and one flat way. Hardened bed ways are optional at small extra cost. See page 28.



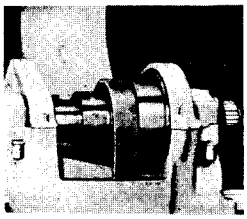
Careful inspection is made to be sure that a uniform bearing is obtained the full length of the bed and that all ways are straight and parallel. A serial number is stamped between the front ways at the tailstock end as shown. A record of each lathe is kept and is filed under this number. When attachments or parts are ordered, the serial number of the lathe should always be stated.

Specifications

10"-1 1/16" COLLET AND LARGER LATHES

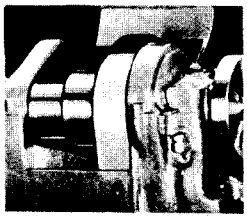
	10"	13"	14 1/2"	16"	16-24"
Capacity					
Swing over bed and saddle wings	10-1/8"	13-1/8"	14-5/8"	16-1/4"	25-1/8"
Swing over cross slide, engine lathe	5-7/8"	7-3/4"	8-3/4"	9-5/8"	18-3/4"
Swing over cross slide, toolroom lathe	5-3/4"	8"	8-15/16"	9-5/8"	.....
Swing over cross slide without chip guard, engine lathe only	6-3/4"	8-3/4"	10-1/4"	11-1/8"	19-1/4"
Between centers (various bed lengths)	14", 20", 27", 34"	16", 28", 40", 52"	24", 36", 48", 60"	33", 45", 57", 81", 105", 129"	30", 42", 54", 78", 102", 126"
Headstock					
Capacity through spindle, nose type collet chuck or lathe chuck	1-3/8"	1-3/8"	1-3/8"	1-3/8"	1-3/8"
Maximum collet capacity, handwheel or handlever type	1-1/16"	1-1/16"	1-1/16"	1-1/16"	1-1/16"
Threaded spindle nose, diameter and threads per inch	2-1/4"—8	2-1/4"—8	2-3/8"—6	2-3/8"—6	2-3/8"—6
Cam lock spindle nose, size	4" type D1	4" type D1	4" type D1	4" type D1	4" type D1
Long taper key drive spindle nose, size	LOO	LOO	LOO	LOO	LOO
Center, Morse taper	No. 2	No. 3	No. 3	No. 3	No. 3
Width, each step of 4-step cone pulley	....	1-3/4"	2-1/16"	2-1/4"	2-1/4"
Width, each step of 3-step cone pulley	1-5/16"	2-3/8"	2-25/32"	3"	3"
Spindle Speeds, Standard					
With 4-step cone pulley, 1-speed motor, number	.....	8	8	8	8
With 4-step cone pulley, 1-speed motor, approx. range, r.p.m.	.....	40—940	30—875	30—980	15—470
With 4-step cone pulley, 2-speed motor, number	.....	16	16	16	16
With 4-step cone pulley, 2-speed motor, approx. range, r.p.m.	.....	20—940	15—875	15—980	15—900
With 3-step cone pulley, 1-speed motor, number	12	6	6	6	6
With 3-step cone pulley, 1-speed motor, approx. range, r.p.m.	55—1400	40—940	30—875	32—945	14—405
With 3-step cone pulley, 2-speed motor, number	24	12	12	12	12
With 3-step cone pulley, 2-speed motor, approx. range, r.p.m.	27—1400	20—940	15—875	20—945	15—790
Higher spindle speeds available at extra cost, up to	2400 r.p.m.	1600 r.p.m.	1200 r.p.m.	1200 r.p.m.	.....
Threads and Feeds					
Number of changes for threads and feeds	70	48	48	48	48
Range of threads cut	4 to 480	4 to 224	4 to 224	4 to 224	4 to 224
Range of longitudinal feeds	.0007" to .0836"	.0015" to .0841"	.0015" to .0841"	.0015" to .0841"	.0015" to .0841"
Range of cross-feeds	.0003" to .0303"	.0006" to .0315"	.0006" to .0315"	.0006" to .0315"	.0006" to .0315"
Lead screw, 29° Acme thread, diameter and threads	3/4"—8	1"—6	1-1/8"—6	1-1/8"—6	1-1/8"—6
Compound Rest					
Cross slide travel, engine lathe model	6-1/4"	8-3/4"	10"	10-1/2"	10-1/2"
Cross slide travel, toolroom lathe model	5-7/8"	8-1/8"	9-1/2"	10-1/16"	....
Angular hand feed, compound rest top slide	2"	3-1/8"	3-1/8"	3-3/4"	3-3/4"
Tool post opening for tool holder shank	3/8" x 13/16"	1/2" x 1-1/8"	5/8" x 1-3/8"	5/8" x 1-3/8"	5/8" x 1-3/8"
Tailstock					
Center, Morse taper	No. 2	No. 3	No. 3	No. 3	No. 3
Spindle travel	2-1/8"	4-1/4"	5-1/4"	5-3/4"	5-3/4"
Set-over of top for taper turning	11/16"	15/16"	15/16"	1"	1"
Motor					
Recommended size, one-speed	3/4 h.p.	1 h.p.	2 h.p.	2 h.p.	2 h.p.
Recommended size, two-speed	1 h.p.—1/2 h.p.	1-1/2 h.p.—3/4 h.p.	2 h.p.—1 h.p.	2 h.p.—1 h.p.	2 h.p.—1 h.p.
Optional size, one-speed	1 h.p.	1-1/2 h.p.	3 h.p.	3 h.p.	3 h.p.
Optional size, two-speed	.....	2 h.p.—1 h.p.	3 h.p.—1-1/2 h.p.	3 h.p.—1-1/2 h.p.	3 h.p.—1-1/2 h.p.

Only South Bend
OFFERS ALL THESE
Optional Features



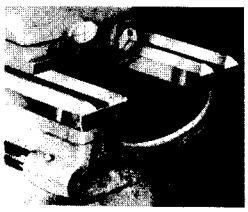
FOUR-STEP PULLEY
(13" and larger lathes only)

Provides eight spindle speeds with one-speed motor, sixteen speeds with two-speed motor. Desirable for toolroom work and finishing operations.



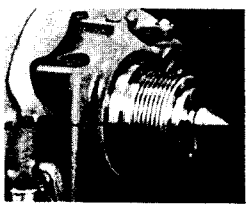
THREE-STEP PULLEY

Provides 6 or 12 spindle speeds with one-speed motor, 12 or 24 with two-speed motor. Wide belt transmits maximum power for heavy roughing cuts.



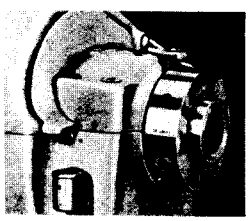
HARDENED BED WAYS

Hardened and ground bed ways resist wear and scoring. They are supplied to order in lieu of regular bed ways at extra cost. See page 28.



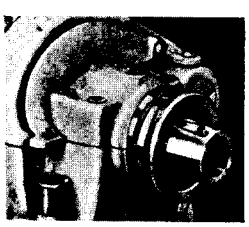
THREADED SPINDLE

Supplied unless cam lock or long taper key drive spindle is specified. Precision milled thread assures perfect interchangeability of chucks, face plates and work fixtures.



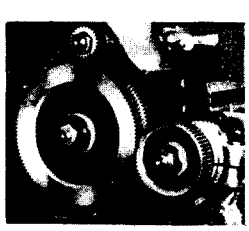
CAM LOCK SPINDLE

4" Type D1 Cam Lock Spindle supplied to order in lieu of regular threaded spindle at extra cost. Chucks, face plates and other accessories available. See pages 28 and 29.



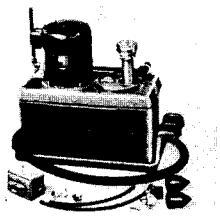
LONG TAPER SPINDLE

Size L00 Long Taper Key Drive Spindle supplied to order in lieu of regular threaded spindle at extra cost. Chucks, face plates, and other accessories available. See pages 28 and 29.



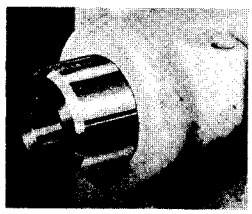
METRIC EQUIPMENT

Metric lead screw, metric quick change box and metric graduations supplied in lieu of English at no extra cost. Metric transposing gears at extra cost. See page 59.



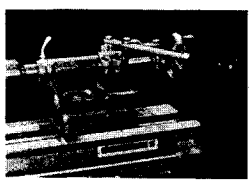
COOLANT EQUIPMENT

Coolant pump, reservoir, oil pan and piping speed production and improve finish on many classes of work. Supplied at extra cost. See page 44.



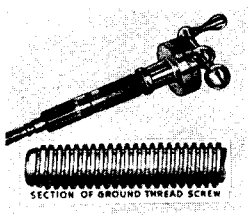
HARDENED TAILSTOCK TAPER

Tailstock spindle with hardened and precision ground taper furnished in lieu of regular at small extra cost. See page 47.



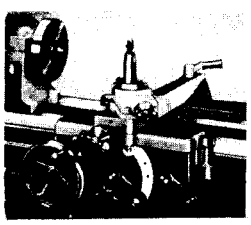
HANDLEVER TAILSTOCK

Supplied in lieu of regular tailstock at extra cost. Also available as an extra. Speeds drilling and reaming operations. See page 39.



GROUND THREAD CROSS-FEED SCREW

Special cross-feed screw assembly with hardened and ground thread supplied in lieu of regular at small extra cost. See page 47.



SPECIAL FINISH

Any desired color or combination of colors can be supplied in lieu of the regular gray enamel finish on South Bend Lathes. See page 38 for extra charges.

Standard Equipment –

ENGINE LATHES (10"-1⅛" Collet and larger)

Equipment supplied and included in the price of each South Bend Engine Lathe is as follows:

Thread indicator dial
Thread cutting stop
Small face plate
Round tool post assembly
60° Centers and spindle sleeve
Necessary belting and motor pulley
Wrenches, installation plan and manual
Prices of 10"-1⅛" Collet Bench Lathes also include steel bench with built-in chip pan.
Electrical equipment is not included. See pages 60-63.

TOOLROOM LATHES (10"-1⅛" Collet and larger)

South Bend Toolroom lathes are built to *ultra-precision* tolerances —even closer than our Engine Lathes. Special lead screw and spindle alignment tests are made on each toolroom lathe as it is assembled to assure precision for the most exacting toolroom work. In addition to all regular equipment supplied with South Bend Engine Lathes, the Toolroom Lathes have the following equipment:

***Precision* lead screw**
Handwheel collet attachment (less collets)
Collet rack
Telescopic taper attachment
Large face plate
Chip pan
Micrometer carriage stop